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NEOTYPIFICATION OF *VERBENA CARNEA* (VERBENACEAE)

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ABSTRACT

A neotype is selected for *Verbena carnea* Medikus (from 1784), securing its continued usage as the name for a species of the southeastern USA. The description and type of *Verbena caroliniana* Michx. (from 1803) refer to the same species as *V. carnea*, but the application of *V. caroliniana* has been confused. Michaux's publication cited the authority of the name as Linnaeus, but *Verbena caroliniana* L. (1774) is an orthographical variant of *Verbena carolina* L. (1753), a different species. Similarly, the name *V. caroliniana*, as repeated from Linnaeus by Willdenow (1797) and Sprengel (1825), referred to *V. carolina* L. *Phryma caroliniensis* Walter (from 1788) also refers to the same species but is without a type.

Verbena carnea Medikus (from 1784) has generally been used as the name for a distinctive species of the southeastern USA (e.g., Perry 1933; Small 1933; Fernald 1950; Moldenke 1960, 1970, 1979; Radford et al. 1968; Wunderlin & Hansen 2010). Earlier, Walpers (1845) used *V. caroliniana* Willd., citing in synonymy *V. carnea* Medikus and two others that joined together the concepts of the southeastern USA species and Mexican species. Gray (1878) used *V. caroliniana* Michx. (from 1803) for the USA species. O'Leary et al. (2010) have re-adopted *V. caroliniana* Michx. as the correct name for this species, as preferred over the earlier one by Medikus, reiterating earlier observations by Moldenke that *V. carnea* lacks a type and that its protologue description is ambiguous or insufficient in establishing which species is described. Schauer's early overview of Verbenaceae (1847) referred to this species as "39. V. carnea (Med. fide auct.)" (p. 545), implicitly acknowledging that his application of the name was a continuation of earlier usage; he cited various collections but not one associated with Medikus.

Moldenke (1960, pp. 296) acknowledged that no type for *Verbena carnea* was known and quoted a 1941 letter from J.H. Barnhardt pertinent to the consideration: "I have never heard of any Medicus specimens. He was in charge of the palace garden at Mannheim, and very likely described from living plants. Whether he or the garden had a herbarium, I do not know, but if so it may have been destroyed in the Austrian bombardment of 1796, which nearly wiped out the town. The old-time palace garden was at last accounts a public park; perhaps, after 160 years, the verbenas still grow there! As far as I know, the present-day herbarium nearest (10 miles) to Mannheim is at the University of Heidelberg, and is very little known to taxonomic botanists. If it were not for this war inquiries might locate Medicus specimens there, but that is not likely."

The German protologue by Medikus of *Verbena carnea* was quoted by Moldenke (1960, pp. 296–297), but he did not translate it or discuss any aspect of it (nor, apparently, did Moldenke ever, in any publication, explicitly comment on the justification of adopting the Medikus name). Medikus described nothing but features of floral morphology, noting that the corolla tubes had hairy throats like those of *Verbena*, *Glandularia*, *Priva*, and *Phyla* and apparently describing the bilobed stigma and globose stigmatic area on the abaxial lobe. The flowers were described as flesh-colored ("Die Blume ist fleischfarben")—presumably the basis for the choice of epithet. The stigma morphology

places the species with either *Verbena* or *Glandularia*, but there is nothing in the protologue that would point to or eliminate any species in either genus. I agree that the protologue is completely ambiguous and vague, yet at some point in the early history of the name, it came to be associated with the species under consideration.

Michaux's *Verbena caroliniana* refers to the same species.

The name *Verbena caroliniana* has been confused in usage—with varying applications of that epithet and also with ambiguity in application of the related name *V. carolina*. *Verbena carolina* L., as currently identified, is a separate and distinct species mostly of Mexico and the southwestern USA (Nesom 2010). Linnaeus mistakenly used *Verbena caroliniana* L. (Syst. Veg. ed. 13, 62. 1774) as an orthographical variant of *Verbena carolina* L. Willdenow (Sp. Pl. ed. 4, 1(1): 119. 1797) followed the mistake, using "*Verbena caroliniana*," the orthographical variant, repeating Linnaeus's original description of *V. carolina* and referring to a Dillenius illustration pertinent to the typification of *V. carolina* L. Sprengel (Syst. Veg. 2: 748. 1825) treated "Verbena caroliniana," also clearly describing the Mexican species, citing "Carolina, Mexico. (V. 2serrata Kunth)."

In Michaux's use of the name *Verbena caroliniana*, he specifically attributed the authorship to Linnaeus, but both Michaux's description and the type specimen at P associate the name with the southeastern USA species rather than the primarily Mexican one. This iteration of *Verbena caroliniana* has been taken as validly published, with authorship attributed to Michaux, at least as early as Gray (1878, p. 336) although Gray's entry cited "*V. carnea*, Med. ex Schauer in DC. l.c. 545" in synonymy. In the same account, Gray cited *V. carolina* L. as a synonym of the Mexican *V. polystachya* Kunth.

Walter's *Phryma caroliniensis* is earlier than Michaux's *Verbena caroliniana*.

Even if it is argued that Michaux's *Verbena caroliniana* is securely established by the description and type, the identity of Walter's *Phryma caroliniensis* (= *Verbena caroliniensis*, as transferred by Small, see below) seems unequivocal from the protologue and that name has long been accepted as a synonym of the same species as *V. carnea*. No type is known for *P. caroliniensis* Walter but its neotypification and use would thus precede acceptance of the Michaux name.

The choice.

Which is the best name for the species under consideration? *Verbena caroliniana* Michx. (from 1803) can be considered unambiguously typified, but the epithet brings with it much historical confusion. *Phryma caroliniensis* Walter (= *Verbena caroliniensis* [Walter] J.F. Gmelin ex Small) (from 1788) refers to the same species but is without a type. *Verbena carnea* Medikus (from 1784) is the earliest name but no type is known and the protologue is uninformative, requiring a neotype is required to establish its identity. A choice between these alternatives incorporates a degree of subjectivity, but a neotype for *V. carnea* is designated here, unambiguously establishing it as the correct name.

Verbena carnea Medikus, Bot. Beob. 1783: 131. 1784. *Stylodon carneus* (Medikus) Moldenke, Revista Sudamer. Bot. 5: 2. 1937. Medikus did not cite a type and no type is known. **NEOTYPE** (designated here): USA. Florida. Jefferson Co.: upland open pine-oak woodland, 1.5 mi N of Wacissa, 5 May 1960, *R.K. Godfrey 59506* (NCU; isoneotypes: SMU!, VDB!).

Phryma caroliniensis Walter, Fl. Carol., 166. 1788. *Verbena caroliniensis* (Walter) J.F. Gmelin ex Small, Fl. S.E. U.S. 1009. 1903. *Stylodon caroliniense* (Walter) Small, Man. S.E. Fl., 1135, 1508. 1933. *Leptostachya caroliniensis* (Walter) Kuntze Revis. Gen. Pl. 2: 508. 1891. **TYPE: USA**. South Carolina, presumably, but Walter did not cite a specimen and no type is known (Dan Ward, pers. comm. 2010). The protologue: "foliis sessilibus obovato-oblongis, serratis, scabris, spica terminali."

Verbena caroliniana Michx., Fl. Bor.-Amer. 2: 14. 1803. **TYPE: USA**. "Hab. in Carolina," no date, *A. Michaux s.n.* (holotype: P fiche!). The entry for this species is "V. CAROLINIANA L. V. erecta: foliis oblongo-obovalibus, obtusis: spicis filiformibus, longissimus, distinctifloris. OBS. Corolla dilute rubens. HAB. in Carolina."

Stylodon scabrum Rafinesque, Neogenyton, 2. 1825. **TYPE: USA**. Publication not seen. The name is indicated to be a "nom. illeg." by Wunderlin and Hansen (2010).

Styleurodon carolinianum Rafinesque, Fl. Tellur. 2: 104. 1837 [1836]. **TYPE: USA**. Not known. Protologue: "395. *Styleurodon carolinianum*, Raf. Verbena do L. Phryma do Walt. Scabro erecto, fol. cuneatis oblongis ineq. serratis, spicis filiformis.—From Carolina to Florida and Alabama, seen alive. Very near *Verb. ringens* in habit. See my New flora." Rafinesque's name apparently was based on the Linnaean *V. caroliniana* and was validly published with attribution of authorship to Rafinesque, analogous to the situation for *Verbena caroliniana* of Michaux.

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